

# Curriculum Vitae

## Virginia Brancato, PhD

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### EDUCATION

**2010:** PhD in Environmental Microbiology and Skin Ecosystem at the Second University of Naples (now University of Campania Luigi Vanvitelli)

**2006:** Master degree in Industrial and molecular biotechnologies at University of Naples "Federico II" (Napoli, IT)

**2004:** Bachelor degree in Biotechnologies for the products and process at University of Naples "Federico II" (Napoli, IT)

### SCIENTIFIC CAREER

**2022- to present:** Researcher (RTDa) in Biochemistry at University Milano Bicocca

**2021-2022:** Marie-Curie researcher fellow at Center of Genomic Science (Istituto Italiano di Tecnologia Milan, ITALY)

**2017-2020:** Assistant professor in Nanotechnology at 3B's Research group at Universidade do Minho (Braga, Portugal)

**2012-2016:** Postdoc fellow at Center for Research in Biomaterials (CRIB) at University of Naples "Federico II"

**2011 (September-December):** Postdoc fellow at the Experimental department of the Seconda Università di Napoli (now University of Campania Luigi Vanvitelli, Napoli, IT).

**2011 (June-September):** Postdoc at the National Institute for Medical Research (Mill Hill, London, UK).

**2011 (March-April):** Postdoc at the Experimental department of the Seconda Università di Napoli (ora University of Campania Luigi Vanvitelli, Napoli, IT).

**2009-2010 (October-July):** visiting PhD at the National Institute for Medical Research (Mill Hill, London, UK).

**2006 (March-October):** ERASMUS internship at the Department of Biochemistry at the University of Liege (Belgium).

### SCIENTIFIC PROJECT

- Grant Fondazione Roche per la Ricerca: MIMETIC (MicroenvironMent hETerogeneity Cancer): Unravelling tumor heterogeneity in genetic and spatial organization of cancer tissue for improving cancer therapy response. December 2022- December 2023 **Principal investigator**
- MSCA Individual Fellowship. CONTACT Cancer biOengineered Novel microTissues unrAveling Cancer plasTicity Grant from January 2021 to January 2023, **Research fellow**
- Adding another brick in the wall: immune system integration in a 3D bioengineered microtumor to investigate immune-competence mechanism in tumor microenvironment. Fundação para a Ciência e Tecnologia. Grant from 2018 to 2021 / **Principal investigator**
- Forefront Research in 3D Disease Cancer Models as in vitro Screening Technologies. Grant from 2015 to 2020 / **Team Member as Assistant researcher in nanotechnologies**
- Modelling cancer Metastasis into the humAn microcirculation system using a mulTi-organ-on-a-CHip approach. Fundação para a Ciência e Tecnologia. Grant from 2018 to 2021/ **Team Member**
- FROnTHERA: Frontiers of technology for theranostics of cancer, metabolic and neurodegenerative diseases. Grant from 2018 to 2021/ **Team Member**
- Implementation of bio-nanotechnologies for the production of novel leather goods. Grant from 2013 to 2015 / **Collaboration in the project**

- Advanced Nanosystem for a new molecular Oncology (Newton). Progetto FIRB. Grant from 2012 to 2016 / **Postdoc fellow**

## SCIENTIFIC PAPER

- 1) Petroni, S.; Tagliaro, I.; Antonini, C.; D'Arienzo, M.; Orsini, S.F.; Mano, J.F.; **Brancato, V.**; Borges, J.; Cipolla, L. Chitosan-Based Biomaterials: Insights into Chemistry, Properties, Devices, and Their Biomedical Applications. *Mar. Drugs* 2023, 21, 147. <https://doi.org/10.3390/md21030147>
- 2) Lara Pierantoni; **Virginia Brancato**; João B. Costa; Subhas C. Kundu; Rui L. Reis; Joana Silva-Correia; Joaquim M. Oliveira. Synergistic Effect of Co-Culturing Breast Cancer Cells and Fibroblasts in the Formation of Tumoroid Clusters and Design of In Vitro 3D Models for the Testing of Anticancer Agents. *Advanced Biology* 2023 DOI: [10.1002/adbi.202200141](https://doi.org/10.1002/adbi.202200141)
- 3) Ilenia Iaia; **Virginia Brancato**; David Caballero; Rui L. Reis; Massimo Aglietta; Dario Sangiolo; Subhas C. Kundu. Fibroblasts Impair Migration and Antitumor Activity of NK-92 Lymphocytes in a Melanoma-on-Chip Model. *Bioengineering* 2023, 10(1), 52; <https://doi.org/10.3390/bioengineering10010052>
- 4) **Brancato, V.** 3D Bioprinting for Cancer Models. In: Almeida de Sousa, Â.M., Pienna Soares, C., Chorilli, M. (eds) *Cancer Nanotechnology*. (2023). Springer, Cham. [https://doi.org/10.1007/978-3-031-17831-3\\_4](https://doi.org/10.1007/978-3-031-17831-3_4)
- 5) **Virginia Brancato**, Ilaria Brentari, Lucia Coscujuela Tarrero, Mattia Furlan, Francesco Nicassio and Michela A. Denti. News from around the RNA world: new avenues in RNA biology, biotechnology and therapeutics from the 2022 SIBBM meeting. *Biology Open* (2022) 11, bio059597. doi:10.1242/bio.059597
- 6) **Brancato V.**, Reis R.L., and Kundu S.C., Coupling Micro-Physiological Systems and Biosensors for Improving Cancer Biomarkers Detection - Microfluidics and Biosensors in Cancer Research, 2022 307-318, Springer Book Chapter
- 7) Caballero D, **Brancato V**, Lima AC, Abreu CM, Nuno M.jn Neves,Correlo VM, Oliveira JM, Reis RL, and Kundu SC. Tumor-Associated Protrusion Fluctuations as a Signature of Cancer Invasiveness. *Adv. Biology* 2021, 210101, DOI: 10.1002/adbi.2021010192
- 8) Kundu B, **Brancato V**, Oliveira J, Correlo VM, Reis RL, Kundu SC. adipoSIGHT in Therapeutic Response: Consequences in Osteosarcoma Treatment. *Bioengineering* 2021, 8, 83. <https://doi.org/10.3390/bioengineering8060083>
- 9) Canadas R., Patrício P, **Brancato V**, Gasperini L, Caballero D, Pires RA, Costa JB, Pereira H, Yong P, da Silva L, Jie Chen, Kundu SC., Araújo N.A.M., Reis RL, Marques AP, Oliveira JM. Convection patterns gradients of non-living and living micro-entities in hydrogels. *Applied Materials Today*. Vol 21, 2020, doi: 10.1016/j.apmt.2020.100859.
- 10) **Brancato V.**, Reis R.L., and Kundu S.C., "3D cancer spheroids and microtissues", Book chapter in *Biomaterials for 3D Tumor Modeling* 1st Edition August 2020 ISBN: 9780128181287
- 11) **Brancato V.**, Kundu B., Oliveira J. M., Correlo V.M., Reis R.L., and Kundu S.C., "Tumor-stroma interactions alter the sensitivity of drug in breast cancer", *Frontiers in Materials* 2020 7;116 doi: doi: 10.3389/fmats.2020.00116 IF:3.67
- 12) **Brancato V.**, Ventre M., Reis RL., Netti PA. Decellularized matrices for tumor cell modeling. *Methods in Cell Biology*, 2020, 157:169-183 doi:10.1016/bs.mcb.2019.11.015
- 13) **Brancato V.**, Oliveira J. M., Correlo V. M., Reis R. L., and Kundu S. C., "Could 3D models of cancer enhance drug screening?", *Biomaterials* doi: 10.1016/j.biomaterials.2019.119744 2019. IF: 10.273
- 14) Kundu B., **Brancato V.**, Oliveira J. M., Correlo V. M., Reis R. L., and Kundu S. C., "Silk fibroin promotes mineralization of gellan gum hydrogels", *International Journal of Biological Macromolecules*, doi:10.1016/j.ijbiomac.2019.10.269, 2019. IF: 4.784
- 15) Kundu B, Bastos AR, **Brancato V**, Cerqueira MT, Oliveira JM, Correlo VM, Reis RL, Kundu SC. Mechanical Property of Hydrogel and the Presence of Adipose Stem Cells in Tumor Stroma Affect Spheroid Formation in 3D Osteosarcoma Model. *ACS Appl Mater Interfaces*. 2019 doi: 10.1021/acsami.8b22724 IF: 8.97

- 16) **Brancato V**, Gioiella F, Imparato G, Guarnieri D, Urciuolo F, Netti PA. 3D breast cancer microtissue reveals the role of tumor microenvironment on the transport and efficacy of free-doxorubicin in vitro. *Acta Biomater.* 2018 doi: 10.1016/j.actbio.2018.05.055 IF: 6.38
- 17) **Brancato V**, Gioiella F, Profeta M, Imparato G, Guarnieri D, Urciuolo F, Melone P, Netti PA. 3D Tumor Microtissues as an In Vitro Testing Platform for Microenvironmentally-triggered Drug Delivery Systems. *Acta Biomater.* 2017 doi: 10.1016/j.actbio.2017.05.004 IF: 6.38
- 18) **Brancato V**, Ventre M, Imparato G, Urciuolo F, Meo C and Netti PA. A straightforward method to produce decellularized dermis-based matrices for tumor cell cultures. *J. Tissue Eng. Regener. Med.* 2017 doi: 10.1002/term.2350 IF: 4.089
- 19) **Brancato V**, Comunanza V, Imparato G., Corà D, Urciuolo F, Noghero A, Bussolino F, Netti PA. Bioengineered tumoral microtissues recapitulate desmoplastic reaction of pancreatic cancer. *Acta Biomater* 2017 doi: 10.1016/j.actbio.2016.11.072 IF: 6.38
- 20) **Brancato V**, Garziano A, Gioiella F, Urciuolo F, Imparato G, Panzetta V, Fusco S and Netti PA. 3D is not enough: building up a cell instructive microenvironment for tumor stroma microtissues. *Acta Biomater.* 2017 doi: 10.1016/j.actbio.2016.10.007 IF: 6.38
- 21) Gioiella F, Urciuolo F, Imparato G, **Brancato V**, Netti PA. An engineered breast cancer model on a chip to replicate ECM-activation in vitro during tumor progression. *Adv. Healthcare Mater.* 2016 doi:10.1002/adhm.201600772 IF: 5.76
- 22) **Brancato V**, Peduto A, Wharton S, Martin S, More V, Di Mola A, Massa A, Perfetto B, Donnarumma G, Schiraldi C, Tufano MA, de Rosa M, Filosa R, Hay A. Design of inhibitors of influenza virus membrane fusion: synthesis, structure-activity relationship and in vitro antiviral activity of a novel indole series. *Antiviral Resear* 2013 doi: 10.1016/j.antiviral.2013.05.005 IF: 4.3
- 23) Buommino E, De Filippis A, Nicoletti R, Menegozzo M, Menegozzo S, Ciavatta ML, Rizzo A, **Brancato V**, Tufano MA, Donnarumma G. Cell-growth and migration inhibition of human mesothelioma cells induced by 3-O-Methylfunicone from *Penicillium pinophilum* and cisplatin. *Invest New Drugs.* 2011 doi: 10.1007/s10637-011-9698-1 IF: 3.50

## PARTICIPATION IN EDITORIAL BOARD AND REVIEWER ACTIVITY

### Since 01-04-2020- on going

I am official member of the Reviewer Board of the journal *Vaccines* (ISSN 2076-393X; CODEN: VBSABP), an international peer-reviewed open access journal published quarterly online by MDPI. The American Society for Virology (ASV) is affiliated with *Vaccines*.

### Since 01-12-2021 - on going

I am Associate Editor of the "Frontiers in Biomaterials Science" journal. The journal has been released in the second semester of the 2021, so a ISSN code has not associated yet. *Frontiers in Biomaterials Science* publishes fundamental and applied research probing into the science of biomaterials. This interdisciplinary journal publishes studies which address the current lack of mechanisms and fundamental knowledge of old and new biomaterials at the interface of chemistry, physics, biology, materials science, and biomedical engineering.

## MENTORING AND SUPERVISING OF PHD, UNDERGRADUATE STUDENTS AND POSTDOC FELLOWS

- 1) Irene Casamassima (PhD student University of Bologna and Istituto Italiano Di Tecnologia). Research topic: Synthetic lethality studies in 3D pancreatic organoids (2021)
- 2) Jessica Calviello (Erasmus student from University Milano Bicocca) Research Topic: 3D pancreatic model to study drug toxicity (2020)
- 3) Elisa Domaneschi (Erasmus student from University Milano Bicocca) Research topic: 3D heterotypic pancreatic model to study drug toxicity (2020)
- 4) Ilenia Iaia, (PhD visiting student from University of Turin/IRCCS Candiolo). Research topic: CIK-Based immunotherapy in melanoma-on-chip (2019-2020)
- 5) Chenchen Li (PhD student at the University of Shanghai, China). Research topic: 3D breast cancer spheroids as testing platform for theranostic nanoparticles. (2019)
- 6) Giulia Lui, (Bachelor ERASMUS student from University of Parma). Research topic: fabrication of silk fibroin scaffold (2019)

- 7) Rita Rebelo (postdoc hired under the scope of BREAST-IT project) (2018-2020)
- 8) Lara Pierantoni (PhD student in Tissue engineering at 3Bs Research group at University of Minho) Research topic: Biomaterials-based Medical Devices as In vitro 3D Tumour Models on a Chip. (2018-2020)
- 9) Filomena Gioiella, PhD thesis entitled: A new bioengineered 3D tumor platform in vitro to replicate tumor-stroma interaction and investigate anti-cancer drug delivery (2013-2016)
- 10) Emanuela Mellone, Bachelor degree in Biomedical Engineering. Thesis: Realization of tumoral microtissues: a platform for the study of cell-extracellular matrix interaction. (2013-2014)
- 11) Concetta Meo, Master degree in Medical Biotechnology. Thesis: Development and characterization of a decellularized dermis as a 3D cancer model in vitro. (2014-2015)

## **JURY COMMITTEE MEMBER**

- 1) Jury Committee member in PhD defense - 14/05/2019 Candidate: Sofia de Almeida Santos de Castro e Abreu entitled "Development of cell models for translational cancer research". University of Nova Lisboa. (15-05-2019)
- 2) Jury Committee member in Master degree defense. Candidate: Sofia Oliveira entitled "Development of biofunctionalized tubular scaffolds for vascular tissue engineering applications". University of Minho (04-07-2019)